

# Enhancing Customer Wayfinding Experience in a Shopping Facility to improve efficiency: a case study of Port Harcourt Mall

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## ABSTRACT

Despite the fact that wayfinding and direction in complex structures is an important requirement for environmental behavior, research on the subject is scarce, and the issue is not well examined throughout the design process. This article investigates the aspects that impact individuals' navigational behavior in a shopping mall and describes how factors such as building layout, visual accessibility, circulation systems, and signage influence their behavior. The study, which was done at Port Harcourt mall, shows how the user and wayfinding experience of the customer is a crucial consideration when building a functionally effective retail environment. The relationship between navigational behavior and purchasing behavior is examined. According to the findings, respondents did not think the signage system to be adequate. Although they regarded the mall to be an easy setting in terms of navigation, they still needed better solutions to reach specific destinations such as phone booths, bathrooms, or retailers situated in portions of the structure that were not visually visible. As a result, in order to construct a functionally effective shopping environment, it is critical to meet the customers' needs by establishing a readable route finding system that allows them to get to a certain location within the time frame specified. This research uses data collected online from 100 customers of Port Harcourt mall. It is expected that this research will help to propose design decision for architects, designers, and planners to improve customers' way finding experience in large scale shopping complex.

**Keywords:** wayfinding, route, shopping environment, building signage, visual accessibility

## I. INTRODUCTION

Wayfinding is a problem-solving activity that describes the procedures that people employ to find their way around an area. People's perceptions of their surroundings, the availability of wayfinding information, their capacity to orient themselves spatially, and their cognitive and decision-making processes all have an impact on how well they find their way. A successful wayfinding system assists users in developing a strategy for locating and identifying their specific destination (Weisman,1981; Oneil,1991; Passini,1992). When people encounter challenges in the decision-making process in a complicated environment, they have a wayfinding difficulty. Although way finding and orientation in complex buildings is an important criterion for environmental behavior, research on the subject remains limited and the issue is not considered sufficiently during the design process. This article examines the factors that affect way finding behavior of individuals in Port Harcourt shopping mall and explains how their behaviors are influenced by factors such as building configuration, visual accessibility, circulation systems, and signage.

In a complicated context, people find their way through comprehending how the place is organized (Arthur & Passini, 1992). They always strive to detect spatial cues from the environment in order to create a mental map. In these situations, knowledge about individual places, spatial connections between those locations, and those locations' ties to the rest of the structure must be easily kept in one's brain (Dogu & Erkip, 2000). They should be able to distinguish the entire configuration from each other in order to save this information in the user's mind. According to Arthur and Passini (1992), people can only map spatial

items that are unique from their surroundings. This uniqueness may be created by the shape and volume of the space, which define architectural and ornamental aspects, as well as through the use of finishes, light, colors, and graphics (Arthur & Passini, 1992).

## 1.2 Area of Study

### 1.2.1 Analysis of the Spatial Layout of Port Harcourt Mall

Architectural Information

- The main entrance of the mall is significant and can be perceived from a distance. The setting is composed of shops and stores organized leading to the main anchor tenant (SPAR, babyshop/splash), Miniso) on respective floors. The escalators are very visible from the main entrance of the mall. There is only one main entrance into the mall for customers. This entrance is emphasized by the signage system located at the intersections of the atrium.



Figure 1: Exterior View for Port Harcourt Mall (Rivers State Nigeria)

Source: Author's field work



Fig 2: View from the entrance

Source: Author



Fig 3: view from second floor (theatre/food court)

Source: Author's field work



Fig 4: View of the first floor  
Source: Author's fieldwork



Fig 5: View of one of the retail shops on the first floor.  
Source: Author's fieldwork



Fig 6: View from the vehicle entrance  
Source: Author's fieldwork





Fig 7: Main entrance (left) Wakkis restaurant, first floor (right)

Source: Author's field work

## II. LITERATURE REVIEW

Wayfinding is a process that we all go through on a regular basis. This procedure might be as simple as going from one room to another or as complicated as attempting to escape a burning building. Difficulties in wayfinding might result in problems such as lost time, decreased safety, stress, or discomfort. To remove these navigational issues that users may encounter, it is necessary to first understand how they are impacted by the aspects of the built environment. Two key physical elements influence a wayfinding task: the structure of the setting and the quality of the environmental information. The spatial content, form, structure, and circulation of the layout determine it. Environmental information is the architectural and visual representation of information required to solve navigational challenges (Passini et al., 1998). According to Evans, Smith, and Pezdek (1982), people's capacity to recall a building and its position in an urban environment is influenced by a variety of characteristics, including form, the amount of people moving about the structure (i.e., crowd), and the physical features and height of spaces. According to Lang (1987), color aids in the separation of items within a scene as well as across settings themselves.

Wayfinding behavior is influenced by visual or spatial variables such as the types of signs offered, the capacity to see through or out of a setting, the amount to which one place seems distinct from others, and the general design or layout of a setting (Peponis et al., 1990). In terms of wayfinding, the volume of a building is extremely revealing. It informs consumers about the internal organization and circulation system.

The circulation is, of course, the primary structuring element of a plan; it is also the place in which people travel and must navigate. Thus, it is in this place that we attempt to comprehend, and it is in this space that we must make our navigational judgments (Arthur & Passini, 1992). The general plan arrangement of a structure, and especially the simplicity and precision with which one can construct a mental image of it, may have a significant influence on wayfinding behavior. According to a lot of studies, the complexity of a floor plan layout has the greatest effect on wayfinding performance.

## III. METHODOLOGY

To test the hypothesis, buyers were polled on an online survey platform (Survey Monkey) as well as Twitter polls. In all, 100 questionnaires were sent, and all of the questions were completed and therefore usable for analysis. The shoppers were given a five-part questionnaire. The first section of the questionnaire includes questions on shoppers' age, gender, educational level, and mall familiarity (frequency of their visits). The second section employs Babin et al., 'shopping values' scale. Due to consumer time limits and the fact that not every customer has the capacity to construct a cognitive map, this study attempts to identify the customers' cognitive ability using an online questionnaire survey organized on Survey Monkey and Twitter polls.

This scale is made up of 10 attitudinal statements that express and quantify the values that the shoppers in this study assign to shopping in general, rather than particularly to the shopping excursion in question. In the third section, syntheses of attitudinal and behavioral questions

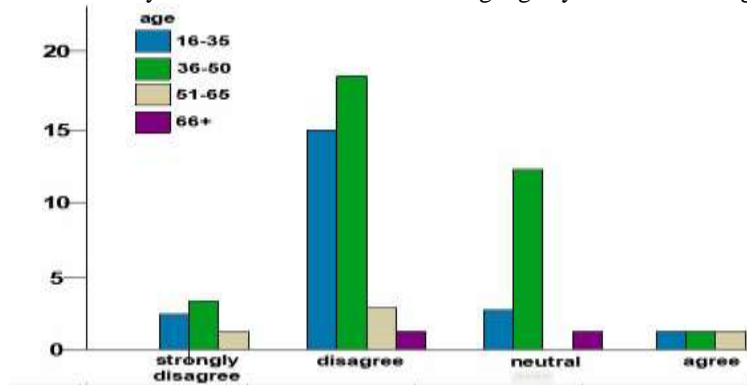
are presented on five-point scales labeled "strongly agrees" to "strongly disagree." The purpose of these questions is to assess attitudes regarding certain user experience and navigation difficulties (Passini, 1977, 1996).

#### IV. RESULTS AND DISCUSSIONS

##### 4.1 Satisfaction with signage system based on age, gender and familiarity

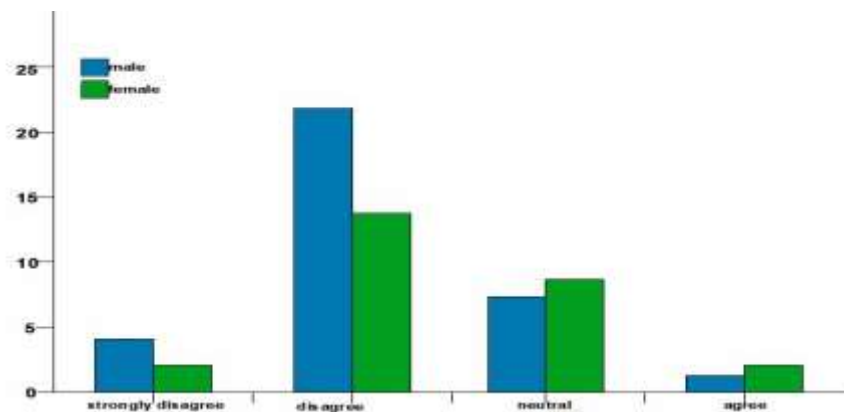
Age, gender, and familiarity all influence satisfaction with the signs system. According to research, customers' demographic traits have an impact on their happiness with signage systems. The study attempted to determine customers' satisfaction with signage systems depending on age, gender, and familiarity in this area.

Table 1: Analysis between satisfaction and signage system bases on age



Sources: Author

Table 2: Analysis between satisfaction and signage system bases on gender



○ Satisfied with the whole signage system

Source: Author

##### 4.2 Satisfaction with Signage System based on Gender

Gender-based Signage System Satisfaction Male consumers outnumber female customers by 57 percent in a sample of 100. According to the statistics, 79.41 percent of male customers and 61 percent of female customers are dissatisfied with the total signage system. 11.76 percent of males and 12.5 percent of females are extremely unhappy with the total signage system. While 7.7 percent of men and 2.94 percent of

women are pleased with the signs system, the data also reveals that male customers are less happy than female customers with the shopping complex's signage system.

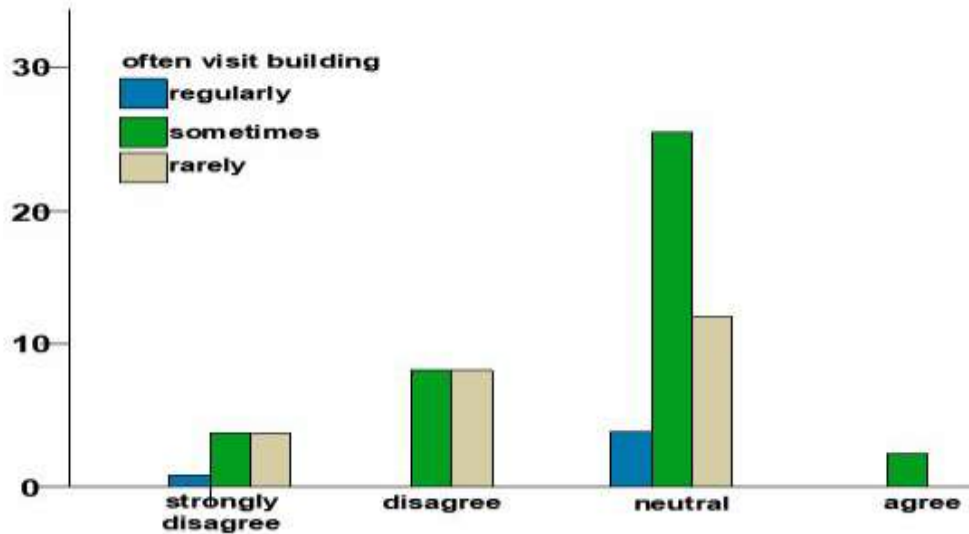
Satisfaction with Signage System depending on Age According to the survey, 72 percent of clients between the ages of 16 and 35 are unsatisfied, with 12 percent very dissatisfied with the total signage system (Table 4-1). Customers aged 36-50 are dissatisfied with the whole signage system, with 42 percent expressing dissatisfaction

and 9 percent expressing severe disagreement. 50 percent of clients between the ages of 51 and 65

were also unsatisfied with the entire signage system.

#### 4.3 Satisfaction with signage system based on familiarity

Table 3: Satisfaction with signage system based on familiarity.



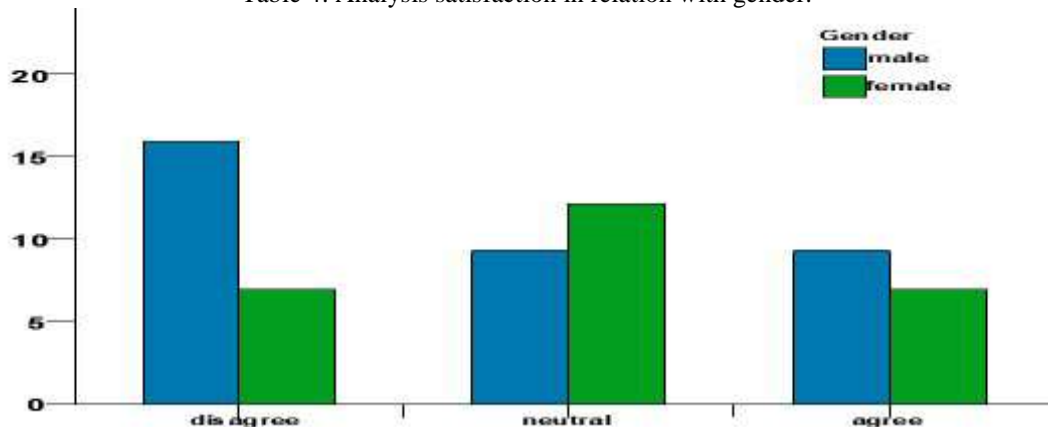
Source: Author

The study found that the frequency and quantity of visits affect the navigation experience. Consumers who visited the shopping center more than a month ago are more unsatisfied with the signage system than customers who went between a week and a month ago and less than a week ago (Table 2). It is probable that the clients felt disconnected from their surroundings as a result of the lengthy distance and grew anxious in order to finish their assignment. 72 percent of consumers who visited this retail center during the previous week are dissatisfied with the entire signage system. According to the findings of the survey, 74% of consumers who visit the retail complex are occasionally dissatisfied with the entire signage system.

#### 4.4 Customer’s satisfaction with environmental legibility in relation with age, gender, and familiarity

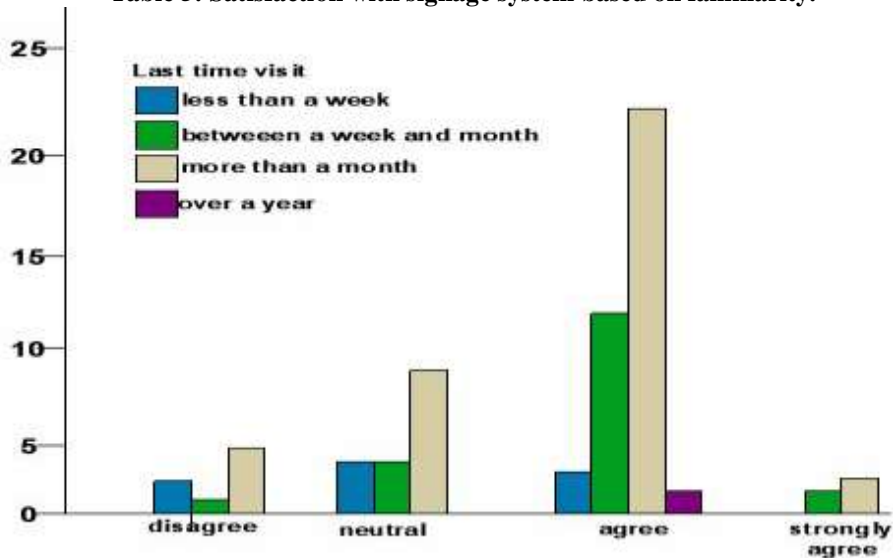
An examination of the relationship between customer demographics and satisfaction with overall environmental legibility reveals that 47 percent of male customers are dissatisfied with overall environmental legibility, while 20 percent of female customers disagree with satisfaction with overall environmental legibility (Table 4-11). Overall environmental legibility was rated as satisfactory by 26.47 percent of male customers and 20 percent of female customers.

Table 4: Analysis satisfaction in relation with gender.



Source: Author

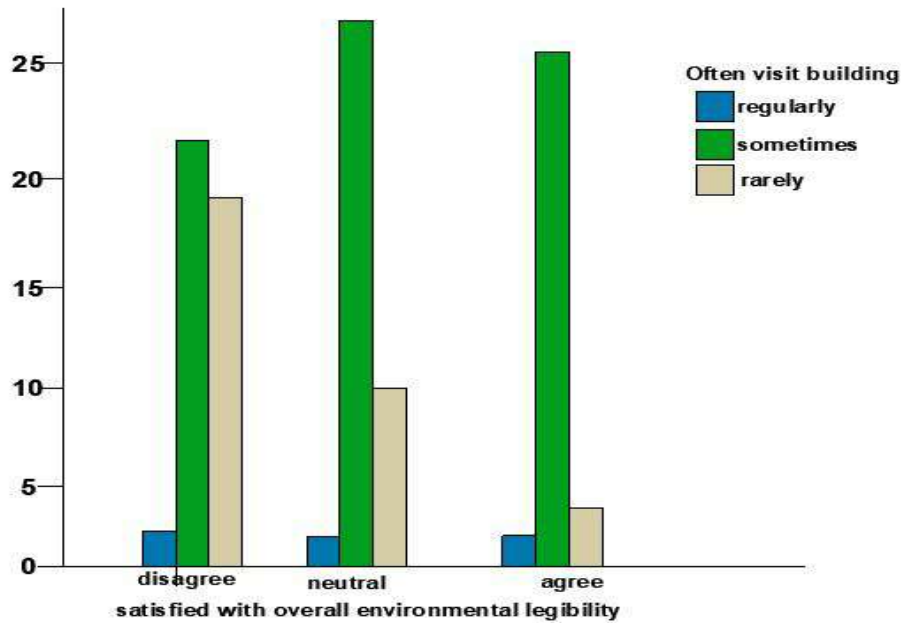
**Table 5: Satisfaction with signage system based on familiarity.**



Source: Author.

#### 4.5 Satisfaction with environmental legibility based on Age

**Table 6: Satisfaction with signage system based on Age**



The age group 36-50, 47% of them is more dissatisfied with overall environmental legibility than other groups (Table 6). The customers who are aged more than 66+, 100% of them shows dissatisfaction with overall environmental legibility. Whereas customers who are aged between 16-35, 50% of them show satisfaction with overall environmental legibility (Table 6).99

#### 4.5 Conclusion of findings

It is obvious from the preceding discussion that the signage system, spatial arrangement, and readability of the surroundings all have an impact on customer experience in user experience and wayfinding circumstances. When the physical surroundings of shopping malls give appropriate information on the spatial configuration of the layout, it improves the wayfinding experience of customers. According to research

findings, when consumers have difficulty finding their path due to inadequacy of orientation, directional signs, and the insufficiency of signage system size, they create more seeking activity, which negatively impacts their happiness with signing. Customers, on the other hand, are dissatisfied with the retail complex because they have difficulties locating their destination, spend more time wandering, and engage in seeking behavior as a result of the layout complexity.

## V. CONCLUSION

Customers' happiness with the intelligibility of their surroundings is a key aspect in their entire navigation experience. The shopping environment is deemed efficient in terms of navigation when everyday customers and visitors involved in diverse activities can find or reach their destination without difficulty. The Port Harcourt retail mall's symmetrical arrangement connecting all levels, along with a courtyard system, makes it easy for shoppers to navigate the complex. Furthermore, a lack of critical navigation information and proper signage at appropriate areas leads to consumer confusion while attempting to find their way to their objectives.

As a result, if the environmental factors aid in finding the path in the required time, consumers become happy with the environment's wayfinding system, and it also aids in improving the wayfinding experience. As a result, the current study attempted to comprehend customer experience and wayfinding experience in connection to signage system, spatial arrangement, and environmental readability in order to improve the functional efficiency of the retail complex.

According to the preceding explanation, the functional effectiveness of a retail complex is mostly determined by how effectively the shopping environment supports consumer navigation performance. When a retail environment is readable, clients require less time and travel distance to reach their goal, and their navigation experience improves. A customer's contentment and anticipation of a repeat visit, as well as the economic efficiency of that retail complex, may be achieved by establishing a visible wayfinding system. As a result, it is critical to create a readable and operationally effective retail environment from the standpoint of wayfinding, and this issue should be tackled early in the design process.

### 5.1 Recommendation for architects and Planners

A competent signage system, according to this study, may make an environment readable and

operationally effective by enhancing consumer satisfaction and minimizing trip time. Effective spatial arrangement and intelligibility of the surroundings assist clients in developing a cognitive image, ensuring efficient mobility and satisfaction during navigation. Based on the study's findings, the following measures can be implemented as future wayfinding solutions to increase the functional efficiency of the retail complex:

- Install orientation signpost "you are here map" at the entry level with enough information about the stores placed on different levels.
- Appropriate placement and size of directional signs to enable efficient consumer flow.
- The main entrance should be located and designed in such a manner that it allows consumers to quickly identify all elements of the building and ensures efficient customer mobility.
- Within a symmetrical plan arrangement, different colors, materials, lighting, and floor finishes may be employed to make a distinction.

## REFERENCES

- [1]. Arthur & Passini(1992). Wayfinding: People, Signs, and Architecture, Ontario: McGraw Hill Ryerson Ltd.
- [2]. Babin B J, Darden W R, and Griffin M (1994) "Work and/or Fun: Measuring Hedonic and Utilitarian Shopping Value," Journal of Consumer Research, (March): 644-657.
- [3]. Dogu, U., & Erkip, F. (2000). Spatial factors affecting wayfinding and orientation: A case study in a shopping mall. *Environment and Behavior*, 32, 731–755
- [4]. Garling (Ed.), *Urban Cognition* (pp. 139-150). London: Academic Press.
- [5]. Hackett P M W, Foxall G R and Van Raaij W F (1993) Consumer in retail environments, *Environment and Behavior*;27:378–99.
- [6]. Passini R (1995). Spatial representations: A wayfinding perspective. In T.
- [7]. Passini R (1996) Wayfinding design: Logic, application and some thoughts on universality, *Design Studies*,17, 319-331.
- [8]. Passini R(1984). *Wayfinding in architecture*. New York: Van Nostrand Rienhold.
- [9]. Siegel, A.W. and White, S. H. (1975). The development of large-scale environments. *Advances in Child Development and Behaviour*, 10, 9-55.



- [10]. Temel, Marina, and Goksenin Inalhan. (2010). Way-Finding Design in Shopping Malls: a Comparative Study of Two Shopping Malls in Kayseri-Turkey. In Vulnerability, Risk and Complexity: Impacts of global Change on Human Habitats (IAPS 21 Conference, Abstracts of Presentations). IAPS. Leipzig, Germany.
- [11]. Turley, L.W. & Milliman, R.E. (2000). Atmospheric effects on shopping behavior: a review of the experimental evidence. Journal of Business Research, 49, 193-211
- [12]. Turner, A; Doxa, M; O'Sullivan, D; Penn, A. (2001). From isovists to visibility graphs: a methodology for the analysis of architectural space. Environmental behavior, 28 (1) 103 - 121.
- [13]. Tzeng, S.-Y., Huang, J.-S., (2009). Spatial Forms and Signage in Wayfinding Decision Points for Hospital Outpatient Services. Journal of Asian Architecture and Building Engineering 8, 453-460.
- [14]. Weisman, J.(1981).Evaluating architectural legibility. Environment and Behavior, 13,189-201

**APPENDIX:**

**Questionnaire Form**

Part I: General Information				
1. Your destination shop route:	A. _____	B. _____		
2. Did you ask the volunteer for direction?	<input type="checkbox"/> Yes ___(Times)		<input type="checkbox"/> No	
3. Gender	<input type="checkbox"/> Male		<input type="checkbox"/> Female	
4. Age	<input type="checkbox"/> 16-35	<input type="checkbox"/> 36-50	<input type="checkbox"/> 51-65	<input type="checkbox"/> 66+
5. How often do you visit the building	<input type="checkbox"/> Regularly	<input type="checkbox"/> Sometimes	<input type="checkbox"/> Rarely	
6. When was the last time you visited this building?	<input type="checkbox"/> Less than a week	<input type="checkbox"/> Between a week and a month	<input type="checkbox"/> More than a month	

Part II: User Characteristic	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. I could keep in the mind which direction of the building I enter from	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. It is difficult for me to understand the direction I am facing in the building	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. The presence of someone to give direction is easy for me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. I notice whether the corridors meet at right angle or not while walking in a building	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. I pay attention to "landmarks" while walking in a building	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. I pay attention to changes in the lighting system of a building while walking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. I pay attention to changes in the floor finish of a building while walking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Part III – Information and way finding:** These statements refer to customers’ satisfaction and travel experience regarding Information and wayfinding.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Sign showing different blocks of the building are useful to me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Signs pointing out different paths and/or directions are useful for me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. The size of signs is appropriate and easy to read	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. You are here map showing my location within the building are useful for me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. The floor numbering system is easy enough for me to get a destination	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. The shop numbering system follows the floor number and large enough for me to find my destination easily	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. I am satisfied with the overall signage system of the building	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Part IV – Layout:** These statements refer to customers’ satisfaction and travel experience regarding the spatial layout of the shopping complex

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Upon entering, it is easy for me to find the information desk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. The entry door is well designed and have visual access to the atrium	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Elevator and staircases are easy to find	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. All parts of the building can be identified from the lift or the escalator during wayfinding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. It is easy to locate main atrium from all parts of the shopping floor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Corridors are free of obstruction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Corridors are wide enough to move easily and comfortably	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. I notice if there is symmetry in the building	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Symmetrical layout planning help to find the destination	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. I get lost on my way to a destination in the building because of the symmetrical planning layout	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. I am satisfied with the overall layout of the building	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Part V – Environmental legibility and wayfinding:** These statements refer to customers’ satisfaction and travel experience regarding the legibility of the shopping environment

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Spent more time walking to find the destination	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Satisfied with the amount of time it took me to get my destination	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Landmark help me to find the destination	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Main circular atrium was helpful to get the direction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Secondary atriums were helpful to get the direction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Feel disoriented for similar secondary atrium	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Very often I get lost in this building	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Could able to draw a quick diagram of the route i have gone through?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. I am satisfied with the overall wayfinding system of this building	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>